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ABSTRACT

The benefits of campus-business cooperation to undergraduate education is considered. Descriptions of programs at 11 colleges are provided, along with an essay by Ernest A. Lynton on the role of liberal arts in career preparation and employee education. In addition to briefly describing liberal arts courses focusing on business, the following programs/activities are discussed: Albion Colleges's Liberal Arts Program in Professional Management; Concordia College at Moorhead's international business program; Gallaudet College's efforts to educate employers and co-workers about hearing-impaired students; University of Houston, Clear Lake's involvement in economic development with regional corporate/industrial and government sectors; Loretto Heights College's Program in Business; University of Louisville's emphasis on the value of a liberal education through its College-Business Cooperative Program; University of Missouri, Columbia's programs that stress ties between agriculture and business; University of New Hampshire's continuing education programs that respond to state needs; University of Puget Sound's Business Leadership Program, Scripps College's Corporate Training for Liberal Arts Women; and Towson State University's efforts to solve business problems with mathematical models. An annotated bibliography is included. (SW)

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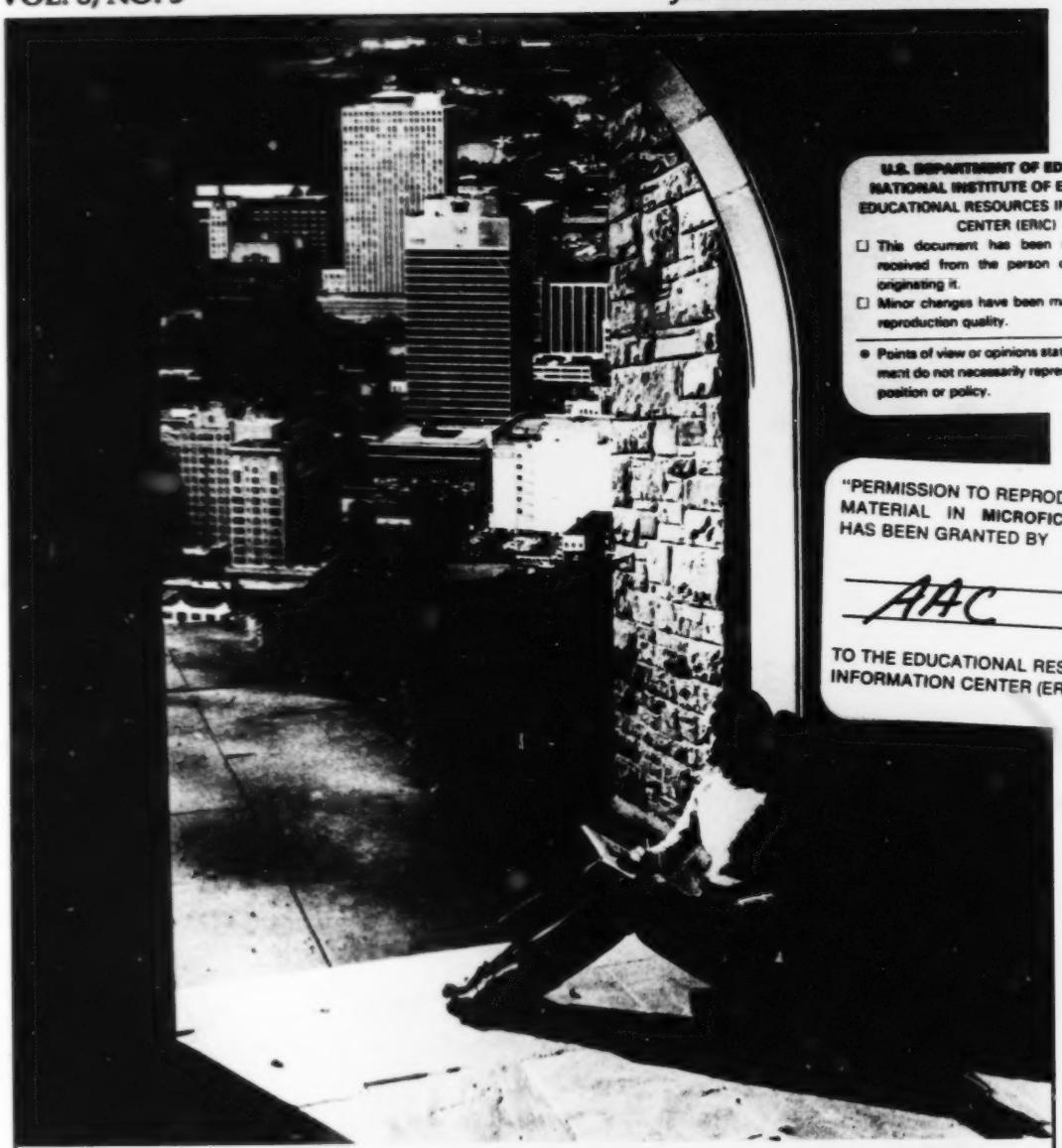

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Strengthening the Connection Between Campus and Business

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The Benefits of Cooperation

The number of responses to the editorial call for this *Forum* may well have set a record. Across the country, campus-business relationships are thriving because of the mutual benefits—to students, faculty, and institutions, as well as to individuals and companies in the private and public sectors.

The relationships take all forms: internships, mentoring, on-site classes, continuing education, workshops, guest speakers, professorships, consulting, individual courses.

Ernest A. Lynton, in his guest editorial, points to the "particularly exciting fashion" in which greater campus-business cooperation can contribute to improving undergraduate education. Certainly, the opportunities available today cannot only whet students' appetites for becoming part of the business world, but give them a true taste.

And business is looking once more to the campus—particularly to traditional liberal arts studies—for creative and innovative personnel and programs. No less than in Bacon's time does studying histories make us wise; poetry, witty; mathematics, subtle; natural philosophy, deep; moral, grave; logic and rhetoric, able to contend.

AAC has set for itself the task of encouraging efforts to integrate liberal arts courses and technical courses into coherent curricula. One of our major initiatives toward that end will be the publication in April, by Jossey-Bass, of "Educating Managers: Executive Effectiveness Through Liberal Learning," a book that focuses on the benefits of a liberal arts education as preparation for current and future managers.

As this issue of *Forum* demonstrates, the dialogue between campus and business continues to lead to action. —*S. L.-R.*

Strengthening the Connection between Campus and Business

Ernest A. Lynton
John McCormack Institute of Public Affairs
The University of Massachusetts at Boston

Opportunities for cooperative activities in the liberal arts between campuses and businesses are legion, and vary widely. Yet, although much is happening already, developments represent only a portion of what could be done. Further opportunities abound both to enrich the liberal arts by a better understanding of the world of work, and to provide liberal arts instruction and consultation to businesses. The latter can be described in terms of successive levels of increasing subtlety and challenge.

In the first place, employees have many unmet needs in fundamental skills: clarity of expression and critical thinking, various analytical skills, basic competence to use computers, an understanding of the elements of various scientific areas germane to a particular business, factual knowledge of various pertinent bodies of information. Many need to learn foreign languages; others need to learn English as a second language.

At a more sophisticated and demanding level, the liberal arts can contribute substantially to helping managerial and professional personnel in understanding the context in which they function. Employers are beginning

The liberal arts can contribute substantially to helping managerial and professional personnel in understanding the context in which they function.

to realize that competence on the job requires considerably more than mastery of a number of technical skills. With the current trend toward decentralization and flatter organizations, even first-level supervisors make decisions and must be able to assess their potential impact: What individuals within and outside the enterprise will be affected and how are they likely to react? What is the significance of the political, social, and economic context? The ability to tackle such questions must become an integral part of effective business activity. The ability, moreover, depends on study of the liberal arts remaining a vital part of continuing professional education as well as of career preparation.

Bridging the gap between theory and practice

Following are just a few examples of the many opportunities for cooperative activities at this level:

- in 1981, a survey of corporate leadership conducted by the Conference Board reported wide agreement that managers need "public affairs skills," which include a sophisticated understanding of the political process at local, regional, and national levels, as well as sensitivity to how company decisions will affect—and be perceived by—internal as well as external constituencies;
- even small companies are increasingly interested in overseas markets for their products and services. At one level, this creates demand for foreign language skills and for the translation of manuals and other company literature; even greater is the need for an understanding of foreign cultures and attitudes that largely determine the success or failure of international ventures;
- insurance companies, banks, and other labor-intensive enterprises view the diversity of their work force as a major organizational problem. They are looking for help in providing supervisors, managers, and other employees with greater sensitivity to attitudinal and cultural differences among ethnic groups.

These are just a few examples of possibilities for additional cooperation and interaction between the liberal arts and the business community. Bringing these opportunities to fruition will not be easy. It will require a number of quite basic changes in the procedures and the attitudes of our academic establishment. In the first place, our colleges and universities must become considerably more flexible as well as quicker in their response to external demands. Secondly, any move beyond providing straightforward fundamental skills requires that liberal arts faculty understand the relationship of their discipline and their area of expertise to the external world. They must be able to bridge the gap between theory and practice. Faculty quality and development are usually defined primarily in terms of keeping up with the latest scholarly advances. In the years ahead, faculty also will need to be able to apply their evolving disciplines to the complex and constantly changing issues of the external world. And finally, it is crucial that the academic community learn to move toward a real sharing of authority in identifying educational needs and in developing ways to meet these needs. Cooperative activities must indeed become what the adjective implies: real joint ventures.

New approaches to professional practice

Such changes in academic mores become particularly important as we move toward a profound and significant level of potential relationship between campus and business: a joint search for a new approach to effective professional practice. A number of straws in the wind indicate an emerging redefinition of competence on the job—be it as a manager, engineer, physician, teacher, or in many other situations. We seem to be moving toward a fundamental change in our existing conception of expertise that will require an equally fundamental change in the way individuals are currently prepared for careers.

Today, most career-oriented programs focus on problem-solving. The curriculum begins with the theorems, paradigms, and methodologies that are assumed to be repetitively applicable to well-defined and recurrent problems, leading to a unique "best solution." Unfortunately the real world is not so simple. On the contrary. Roger

We seem to be moving toward a fundamental change in our existing conception of expertise that will require an equally fundamental change in the way individuals are currently prepared for careers.

Ackoff, one of the founders of the field of operations research that attempts to deal with complexity in a systematic fashion, recently wrote that "the future of operations research is past . . . managers are not confronted

with problems that are independent of each other, but with dynamic situations that consist of complex systems of changing problems that interact with each other. . . . Managers do not solve problems: they manage messes."

We get the same message from Peters and Waterman, Robert Reich, and other current economic gurus: economic vitality requires alternatives to "scientific management."

Common to these and other critiques is the sense that effectiveness on the job and in a profession consists of a reflective and dialectical process. It is one that begins with an attempt to clarify the issues and proceeds by defining—not *the* problem—but rather a set of alternative formulations, each with its own trade-offs among advantages and disadvantages. Of course this process requires substantial technical skills and analytical skills. It also must be guided by a thorough understanding of context and environment.

But even more is involved. Effective practice must reflect attributes that are precisely those we consider to be the highest objectives of a liberal education: the ability to recognize ethical issues and to make value judgments; to assess risks and to weigh what is acceptable; to recognize relationships and interdependence; and to have a sufficiently broad perspective, historically as well as contemporaneously, to cope with ambiguity and change. In his seminal book, *The Reflective Practitioner*, Schön speaks of the *artistry* of the effective professional.

Greater campus-business cooperation can contribute in a particularly exciting fashion to the improvement of undergraduate education generally.

These emerging developments underscore the crucial role of the liberal arts both in career preparation and in maintaining competence on the job. This role will continue to provide growing opportunities for cooperative activities that link the liberal arts not only to businesses outside, but also to professional schools inside, the academic world.

A strong word of warning is in order, however: the need cannot be met by simply adding general education courses to a career curriculum, and such courses cannot be fobbed off on a corporate client. Nor is it, in my opinion, appropriate to suggest that career preparation can best be accomplished by means of liberal arts education as it exists today in most institutions. In the first place, career-specific skills are usually both needed on the job and expected by those who do most of the hiring. As the AAC report, *Integrity in the College Curriculum*, has clearly demonstrated, furthermore, we must first put our own house in order before claiming to be able to help others, and then we must proceed in a joint and collaborative effort to tackle these challenges.

Greater campus-business cooperation can contribute in a particularly exciting fashion to the improvement of undergraduate education generally. The more liberal arts faculty become involved in joint ventures, the more they become familiar with the relationship of their own area of expertise to the external world as well as to other disciplines. This can help substantially in reducing the current narrowness and fragmentation of our curricula, in which so much of the burden of synthesis is left to the student. The broader perspective acquired by faculty can enhance the coherence of what they teach.

It is my personal vision and hope, moreover, that this will lead to a growing convergence of liberal and career-oriented programs and to a disappearance of the dysfunctional and exaggerated dichotomy between "vocational" and "liberal." There is increasing similarity and overlap among the challenges faced by an individual on the job and in daily life: complexity and heterogeneity, divergent interests and conflicting pressures, the need to make choices between competing values and objectives. And increasingly, as well, all aspects of life are interconnected. It is becoming as important to include an understanding of the world of work in a "liberal" education as it is to illuminate "vocational" education with the perspectives and insights of the arts and sciences. Because of this, the cooperative ventures that bring a knowledge of business into the liberal arts curriculum are as much to be welcomed and fostered as are those aimed at enriching career preparation and continuing development.

This essay is based on a book by Ernest Lynton and Sandra Elman on the future role and function of universities. It will be published later this year by Jossey-Bass, Inc.

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Albion College

Liberal Arts Program in Professional Management

How do you prepare today's students for tomorrow's business careers? Albion College believes the best way is to arm students with a liberal arts education, four years of rigorous course work in economics and management, and at least eight months of internship experience. In short, Albion students learn to marry the theoretical with the practical.

Michael Walczak, director of the Albion Liberal Arts Program in Professional Management, maintains that the underlying philosophy of the program is to expose students to liberal arts courses and actual training for a professional career in management. "At Albion, we don't believe that a liberal arts education and career preparation are at odds with one another. We think a solid background in the sciences and humanities and the development of a set of business values are both vitally necessary in preparing students for the challenges and changes they face," Walczak says.

Students completing the program earn a B.A. in economics and management. They are expected to master economics, management, and accounting principles.

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The program also requires that students demonstrate expertise in technical writing, mathematics, computer programming, and speech. Currently, 110 of Albion's nearly 1,600 students are enrolled in the program, which began in 1973.

Students participating in the program attend classes with the rest of the Albion student body. But, according to Walczak, students must take tougher courses, courses "at a higher level" than those taken by other students. "For example," notes Wilson, "a student majoring in economics takes math and statistics. A student in the Program in Professional Management must take the most rigorous of statistics courses, "Quantitative Methods for Managerial Decision-Making."

Walczak likens the program to an honors degree in economics and management. It is this very demanding schedule that gives rise to concern on the part of some students and faculty at Albion. "Albion strives to give students a well-rounded education and this program, some believe, does not allow time for students to explore other liberal arts courses. The program *is* demanding. But I believe that by encouraging excellence in the program we broaden the career options of our students."

The program's demand for excellence makes it attractive to new students and faculty, aiding Walczak in his recruiting efforts. "The biggest problem schools face is in attracting top-flight students. This program enables me to go out and recruit those top students," he notes. Walczak recognizes the importance of experience and practical skills for success in the business world. The Program in Professional Management addresses this concern through a comprehensive internship experience. "The internship program is designed to be an introduction to the 'real life' world of work," Walczak explains, "where students can see the practical application of the theories and techniques they have learned in the classroom."

Firms sponsoring internships must present the student with challenging and realistic work assignments, for which students are paid a salary. The internship takes the place of classroom experience for a full semester, and students receive academic credit upon completion of a research paper on a topic related to their internship experience.

A variety of sponsoring firms offer internships, but most are from the auto industry—understandable given the school's proximity to Detroit. In addition to working at General Motors and Ford, students have had internships at the Michigan National Bank, Texas Instruments, and Touche-Ross. Students sometimes move off campus, even to another town, when completing their internships. In addition, sponsoring corporations award scholarships to students in the program.

Visiting professors program

In addition to classroom work and internship experience, students in the program also run their own speakers program. The Evening Executive Speaker Program brings eight to ten business executives and public figures to the Albion campus during the year to talk to students about financial and economic issues. The Program in Professional Management itself brings leaders in management and economics to Albion for a week, where they are named Distinguished Visiting Professor. These visitors,

who have included Carl Gerstacker, the retired chairman of the board of Dow, and William Ferguson, executive vice president of New York Telephone, spend the week attending classes, seminars, and informal gatherings with students in the program. —*D.E.*

For more information, contact Michael Walczak; Director, Professional Management Program; Albion College; Albion, MI 49224 (417/629-5511).

Concordia College at Moorhead

An international perspective on business

The concept behind Concordia's international business program is one of a "true, valid immersion experience," says French professor David Green. By combining study abroad with a foreign business internship, students majoring in business and economics, coupled with a foreign language, have an opportunity to gain a "global perspective of business."

In deciding upon the structure of the international business program prior to its inception in 1981, Green says that program coordinators asked top-level international businesspersons for their input. "We found that they really had a bias against 'international business majors' because the students learn a little of this and a little of that and not much of either." Consequently, Green emphasizes the fact that Concordia offers an international business *program* and not an international business *major*. Students thus end up with a double major in a language and business administration and economics.

Now in its fifth year, the interdisciplinary program allows up to five students each year to study advanced business and economics courses in either France, West Germany, or Mexico.

Now in its fifth year, the interdisciplinary program allows up to five students each year to study advanced business and economics courses in either France, West Germany, or Mexico. Students receive twelve credits for the three courses they take abroad and an additional four credits for the internship experience.

Students are selected on the basis of their knowledge of business and economics as well as their linguistic and cultural competency because the classes abroad are designed not for Americans but for natives. Prior to participating in the foreign cooperative venture in their senior year, students must have completed four economics courses and a statistics or international finance class.

Primarily a liberal arts college with a student population of more than 2,500, Concordia operates on a 4-4-1 trimester schedule; May is a short term. Preparation for the language component varies according to the programs offered by the French, Spanish, and German departments. Speaking for his department, Green noted that prior to graduate-level study at the Institut de Gestion in Rennes in connection with the international business program, juniors participate in a five-week program of intensive language and cultural study in France —along with other interested French Department students—during the May term. Afterward, a number of students stay on for a two-month practicum, living and working in a small family business. Following that experience," says Green, "they have their skills at a level where they are ready to enter into a program" abroad.

Immediately following the four-month period of study at the participating university in France or West Germany, students complete a three-month internship with a native company or an American multinational firm.

Interns make significant contributions

The international business program intern sponsors have dealt students some weighty responsibilities on a par with those of their regular employees. Sponsoring companies in France have assigned a student to negotiate contracts with Paris advertising agencies at 3M's corporate headquarters; a student has developed a national windsurfing contest sponsored by *Ouest France*, a major regional newspaper; and one has marketed a new product for Biscuiterie Nantais, a cookie and cereal manufacturer in Nantes.

According to Green, the West German program arrangements are being revamped. Presently, a number of the kinds of courses that Concordia's students would be enrolled in abroad are given in-house by the corporations themselves since the West German university system is based on a "preprofessional liberal arts" curriculum. In the past, students have interned at the John Deere Corporation and Rau Agroteck, both in Mannheim, and Allianz in Stuttgart.

Spanish students enrolled in the international business program must contend with an altogether different schedule, and possibly one that requires more stamina on their part. These students participate in four months of simultaneous study and internship. Students intern with a Mexican business firm during the day in conjunction with evening study at the Universidad de las Américas in Mexico City. As a result, says Green, the

class assignments cannot be quite so demanding as those offered in France or West Germany.

A significant number of the intern sponsors have indicated their satisfaction with Concordia's students. "They have found that the American students seem to have a more aggressive nature" and take on challenges independently, more so than their native counterparts, says Green.

To date, a number of students have been offered jobs with the firms at which they interned, says Green. While still in France, one student was offered a job by both Cargill and General Mills. Another took advantage of the opportunity to work for an international consulting firm in Washington, DC, which paid the expenses she incurred in flying back from France to discuss their offer. Spanish and German students have likewise been offered positions upon graduation.

Completion of the international business program, says Green, adds to a student's overall record of collegiate achievement. Among the benefits to a hiring business firm, Green notes that program participation points to the following:

- a demonstrated commitment to a business career;
- a global perspective of business;
- a high degree of maturity;
- self-confidence;
- a successful work experience demonstrating that a young person can be successful in business even in another cultural setting;
- personal and professional human relations skills on an intercultural level as well as interdisciplinary awareness; and
- foreign language skills.

When asked to put his finger on the program's most important benefit, Green maintains that "more than anything, it is that ability to look at our global economy from within a second linguistic/cultural/economic perspective. That can't be done by studying *about* it in this country, nor can it be done by studying *about* it in another country. You have to be a part of it." —*L.M.N.*

For more information, contact David Green; Professor of French, Concordia College at Moorhead; Moorhead, MN 56560 (218/299-3404).

Gallaudet College

Educating the office about the student

What makes the difference between a student's successful co-op or internship experience and an unsuccessful one?

When Gallaudet College administrators sought the answer to that question some five years ago, the key they found, according to Anne B. Nissen, director of Experiential Programs Off Campus (EPOC), was "the supervisor's attitude."

Since then, EPOC has concentrated its efforts in two areas: educating supervisors and colleagues about working with hearing-impaired students, and helping students derive maximum benefit from their work experiences.

In the process, Gallaudet has created materials and programs that are generally applicable though they deal in part with the special issues involved in working with deaf students. How many students, after a co-op or internship experience—especially a first one—are dissatisfied at not having had an opportunity to work on substantive projects or not having had an opportunity to grasp the inner workings of the organization where they worked?

EPOC addresses these situations directly in a 24-page supervisor's manual that provides information about the program itself as well as advice on everything from interviewing students through evaluating them. Among points raised are:

- Are there deadlines the student will be expected to meet?
- Will the student have a place to work?
- Will the student be expected to meet routinely with the supervisor?
- What are office policies about dress, calling in sick, lunch?
- Who will introduce the student to other staff members?

How many students, after a co-op or internship experience—especially a first one—are dissatisfied at not having had an opportunity to work on substantive projects or not having had an opportunity to grasp the inner workings of the organization where they worked?

In addition, the manual covers special issues:

- Have co-workers been told that a deaf student will be joining them? Have they had an opportunity to ask questions and share their concerns?
- If the student is to attend staff meetings, what arrangements will be necessary?

• Who will inform the student of a crisis situation, such as a fire alarm?

• How will information be shared with the deaf student? EPOC recommends putting much of it into written form.

EPOC has produced a number of short brochures for deaf students' co-workers—*Tips on Interviewing Deaf Students, General Communication Tips for Working with Deaf Students,* and an illustrated booklet prepared by a graduate intern in the EPOC program, *Communication Tips . . . enter deaf worker*—and a series of videotapes.

'A deafening experience'

Supervisors are also invited to participate in a day-long workshop held twice each year on the Gallaudet campus, "Strategies: Supervising Your Hearing Impaired Students." Morning sessions focus on deafness—its causes and effects and psychological and social aspects; the afternoon sessions are aimed at helping supervisors supervise.

A special feature is the lunch period, called "A Deafening Experience" on the printed program. A number of participants in the workshop are fitted with instruments that give them moderate hearing loss. One wearer sits at each table and, Nissen reports, usually has a very profound psychological and emotional response to the experience. "Upon losing their hearing, many volunteers find themselves being treated differently and changing their own behavior to adapt, perhaps even withdrawing from the group. We emphasize that it is only a simulation; that means, of course, that the volunteers know it's only for a short time but they also don't have time to develop the 'coping mechanisms' our students have developed."

The outcome of the workshop, Nissen reports, is that supervisors recognize that what they are learning has applications well beyond supervising deaf students. And the result of working with a deaf student, she continues, is that supervisors may spend more time initially on supervision but become better all-round supervisors.

In addition to presenting the workshops, Nissen and her colleagues offer on-site training in offices that are considering using EPOC students. "Even if the supervisors are well prepared and have the best intentions," Nissen explains, "co-workers need to be invested in the success of the effort or they can sabotage it."

In one situation, a branch of an international accounting firm was considering participating in the EPOC program. After EPOC provided three candidates who were interviewed for the position, Nissen met with all the managers in the office who then voted to take one student. Nissen returned to the firm's offices again to meet with the entire staff and answer questions—"mostly about courtesy issues," Nissen notes. Not only was the student's placement a success, she reports, but the firm has hired its first deaf full-time professional staff member.

Rigorous training for students

EPOC conducts workshops for students, too, to prepare them for their experiences. Students consult with one another and EPOC staff members to assemble their resumes and to practice being interviewed, both with and without an interpreter facilitating the process.

Much of students' time and focus in their workshops is on communication strategies. Nissen tries to help students "take charge; that is, be a facilitator. We remind them that they are the experts at dealing with helping themselves be understood. They know what they need, and they have to be able to express those needs."

All EPOC students participate in at least one special "de-briefing" session designed to help them learn each others' strategies and, in Nissen's words, "cheer one another on. What we are trying to help our students develop are ways of making themselves equal to others. The students are able to teach their peers by sharing their own experiences, the ways they coped with a specific situation."

About 60 percent of Gallaudet's graduating seniors have at least one EPOC experience. In certain circumstances, they receive credit for participating. Business students, for example, might use their experience to write a paper on the formal or informal power structure of the organization where they worked. Some students receive salaries from their placements; those who do not may receive aid so that they can participate and have the experience.

The program, which grew out of a 1973 federal feasibility study on co-op programs, includes an Employer Advisory Board composed of individuals from across the country. They review EPOC materials and make suggestions to Nissen and her colleagues.

EPOC is a campus-wide academic program under the auspices of Gallaudet's dean of arts and sciences. Prospective students and their parents learn about it long before coming to Gallaudet through a brochure specifically aimed at them. "It's very important to our students and their parents to know what kind of support Gallaudet, as an institution, can offer them. The school itself values EPOC highly." —*S.L.-R.*

For more information, contact Anne B. Nissen; Director, Experiential Programs Off Campus; Gallaudet College; 800 Florida Avenue, NE; Washington, DC 20002 (202/651-5548).

University of Houston–Clear Lake

Partnership with the community

Pursuing economic development enterprises in partnership with the regional corporate/industrial and government sectors serves as a "deliberate external and internal strategy" of the university's institutional mission, says University of Houston-Clear Lake Chancellor Thomas M. Stauffer. UH-Clear Lake's activities in this area range from outside consulting by a majority of the faculty to representation on a newly established council working to boost the state's economy through advancement of Texas's technology base.

Unlike most traditional universities that are research- or teaching-oriented, notes Stauffer, 11-year-old UH-Clear Lake is an "adult education institution serving an advanced technology community." There are no freshman or sophomore classes. Forty percent of the courses are offered at night. Fifty-five percent of the 6,500 student body, whose average age is 32, are doing graduate work. Eighty-five percent work either full- or part-time. Most are married and have families. With demographics such as these, it is apparent that UH-Clear Lake's curriculum emphasizes a career/technical focus.

Like the university itself, UH-Clear Lake's involvement in the economic development arena is a recent venture. Only since Stauffer's appointment in 1982 did the university begin to work cooperatively with area business/industrial and government leadership. The impetus for this came from Stauffer's prior work at the American Council on Education where he was involved with business/higher education relationships on a national level.

Some of the initiatives resulting from UH-Clear Lake's economic development efforts include the creation of the Clear Lake Area Economic Development Foundation, which uses university personnel as consultants; the founding of the Clear Lake Arts Festival; and establishment of major new ties with the neighboring Johnson Space Center.

Nurturing the arts

The idea for the Clear Lake Arts Festival originated with the university and has now become a community project. Many of the Galveston Bay and Gulf of Mexico area cultural communities were represented at the first annual festival this past October. A benefactor acknowledged the university's support for the arts with a gift of 18th- and 19th-century Japanese prints. Additionally, Stauffer notes, within the last eight months UH-Clear Lake has attracted a semiprofessional ballet company, and the Clear Lake Symphony has begun giving concerts at the university. "We're trying to use the campus almost full-time," he adds, "to expand the university's role in the area of the visual and performing arts."

The university's involvement in economic development has bred a variety of community outreach programs as well. In particular, the new Weekend College provides an opportunity for UH-Clear Lake's unique student population to schedule classes during nonworking hours. Not to be confused with "continuing education" courses offered in the evenings and on weekends by other schools, Weekend College "simply moves the main body of the regular curriculum offering to the weekends as a matter of convenience to the kinds of students we serve," says Stauffer.

As a result of the university's interest in economic development, it has attracted two new research and development parks adjacent to the campus. One will include a major IBM building that will house 1,600 employees when it opens in summer 1986. "In both cases, the purpose is not to become land developers," says Stauffer. "We are not proceeding with anything that does not have a direct academic tie-in—both of the short- and long-term nature—to the university."

UH-Clear Lake's economic development efforts have met with much success, says Stauffer, so much so that the university "has been called upon to be instrumental in taking on other tasks." These include "a plan to diversify Houston's economy, which led to the establishment of the $7 million Houston Economic Development Council" and a new plan to promote international commerce in the Houston-Galveston metropolitan area.

Stauffer admits that not every university can consider entering into the same types of partnerships with the business/industrial community in their regions because institutional missions differ. But for UH-Clear Lake, these efforts have led to "a new sense of direction" for the university. "Given the nature of the region we serve and the nature of the students we attract, where economic development is a very major issue, it would be shortsighted for the university to pretend that that kind of interest does not exist."

Specifically, the new consulting opportunities relating to the economic development activities undertaken at UH-Clear Lake have provided the faculty with new direction in their own careers, says Stauffer. "Rather than being cloistered in the academic setting, we're now saying it's okay to get involved outside." —*L.M.N.*

For more information, contact Thomas M. Stauffer, Chancellor; University of Houston-Clear Lake; Houston, TX 77058-1050 (713/488-9336).

Loretto Heights College

Building entrepreneurial skills and aiding small businesses

Loretto Heights College's Program in Business makes students aware of their roles as contributing members of a community as well as active participants in the business world. Through its Center for Small Business and its entrepreneurial studies programs, explains David Wilson, director of the Program in Business, "Loretto Heights emphasizes the study of leadership, human relations, and communications—skills we see as being most in demand by employers of business graduates."

Students cultivate these skills by taking 36 credits in liberal arts courses and 56 credits within the Program in Business, one of five program areas offered at this private, independent school of approximately 700 students. They can specialize in a number of business fields to fulfill the requirements for their business major; concentrations are available in general business administration, human resource management, real estate, small-business management, and entrepreneurial studies.

Wilson notes that by far the largest number of the program's students—80 percent in 1985—select a concentration in entrepreneurial studies. "Most schools teach students how to go out and get a job working for corporations or other people's businesses. We teach students how to be their own boss, how to start their own businesses, and how to use opportunity to broaden their career options."

Even internships—required for completing a degree in any area in the Program in Business—are available in entrepreneurial studies. "A student with a concentration in entrepreneurial studies may develop a business plan for starting his or her own business and then fulfill the internship requirement by implementing that plan," Wilson says.

Center for Small Business Studies

The Center for Small Business is also a part of the college's Program in Business. The center serves as an educational clearinghouse for programs, workshops, seminars, and conferences for students and members of Denver's business community. Programs at the center have included topics such as "The Business of Art," "Strategic Planning for Small Engineering Firms," "Planning for and Operating a Small Business," and "Microcomputer Aids for the Small Business."

The center was established in 1981 with a grant from the Frost Foundation to assist small business development in the Denver area. Wilson, who is one of the directors of the center, explains that the large number of small businesses in the Denver area (99 percent of all businesses in Colorado are classified as small businesses) served as an impetus for the development of the center. Between 300 and 350 businesses participate in the center's activities, Wilson says, making it "a public service resource for Denver-area small businesses." But he points out too that "the center also exists for students as a hands-on laboratory—a place where students can network directly with business people."

One program offered through the center, the Executive Dialogue Program, is an example of how the Program in Business at Loretto exposes students to the practical know-how of an active small business community. Every month, Wilson explains, a group of 10 to 12 small business owners meets for a Dialogue session. The sessions are held in rotation at each of the participants' place of business. The hosting businessperson presents his or her problems and concerns and the group, in turn, offers solutions, advice, and a sympathetic ear to the host. This self-help group thus brainstorms solutions to its common problems. Students in the Program in Business sit in and observe these sessions; they thus hear business people talk openly about the trials and tribulations of running a business.

The Center for Small Business also sponsors the President's Breakfast Forum. "This program promotes dialogue among guests from the small business community and the students, faculty, and staff of our college. The presentations and ensuing discussions provide our students with insights to the issues and opportunities facing entrepreneurs in the 1980s," concludes Wilson.

—D.E.

For more information, contact David C. Wilson; Director, Program in Business; Loretto Heights College; Denver, CO 80236 (303/936-8441).

University of Louisville

Reawakening an awareness of the arts and sciences

Businesses in Louisville are reawakening to the value of a liberal education through the efforts of the University of Louisville's College-Business Cooperative Program (CBCP).

The idea for the program was first conceived by Lois Cronholm, now at Temple University, when she was dean of Louisville's College of Arts and Sciences. According to Robert Schulman, CBCP's coordinator, Cronholm initiated the program because she felt "that the cause

of arts and sciences . . . was becoming withered and spavined, and that some special effort was needed to reawaken an awareness—especially among leaders of the business community—about the values and the needs of arts and sciences."

While many large national corporations such as AT&T, General Motors, and IBM recognize the value of a well-rounded education in terms of management potential, Schulman says, moderate-sized firms still tend to recruit primarily from schools of business and accounting.

As Schulman notes, "what we are hearing is the observation that pound for pound the individual who has had a specialized technical education, including in that a specialized business education, is not able to bring to corporate life the freshness in decision-making, in communication, and in conceptual understanding that are brought by persons of comparable IQ who have had a broader liberal arts education."

'Some special effort was needed to reawaken an awareness—especially among leaders of the business community—about the values and the needs of arts and sciences.'

Working through the various departments of the College of Arts and Sciences, CBCP—now in its second year—is an administrative effort "to broker a new and broader sense of awareness and appreciation of the mutual advantages that accrue to the university and the corporations for more literate and aware persons," says Schulman. Through conferences, workshops, corporate visitations, and course development, he explains, the program demonstrates and reiterates the value of a liberal education.

In contacting corporations, Schulman says, he meets first with chief executives and then those in charge of management training and employee development. He suggests those courses, available on campus or at the work site, that he believes blend the right amount of technical and liberal arts elements. Developed by Louisville's academic departments in cooperation with CBCP, these courses include—among others—organizational communication, specialized writing, "the Corporate World through Literature," short-term intensive instruction in a variety of languages, "Commercial Facility Location," demographic analysis, organizational psychology, "Historic Preservation," environmental management, professional ethics, "Machiavelli in Business and Government," and special topics in labor management.

At a CBCP-sponsored conference last April, for example, entitled "Liberal Education and Livelihood: 'A Match for all Reasons,'" university faculty from the College of Arts and Sciences and the School of Business met with business and government executives and experts in job placement and career counseling to discuss what employers expect and should get from liberal arts graduates, and how the College of Arts and Sciences should best prepare its graduates to fulfill such expectations.

Another CBCP-sponsored conference, this past December, brought together corporation executives and faculty from Brandeis, M.I.T., and U of L's College of Arts and Sciences for one day "to examine how a handful of selected classical works of fiction and drama can illuminate the problems of decision-making and values encountered by executives in corporate life." Begun at Brandeis four years ago, the program has involved judges, lawyers, law enforcement officials, doctors and health service professionals, and now business executives, Schulman says. Participants spent the day examining, having read beforehand, *King Lear*, a story by Joseph Conrad, and two short stories by George Orwell.

Much of CBCP's success, Schulman feels, is due to U of L's taking the initiative, instead of just waiting to be called on by the business community. A Louisville bank, for example, had recognized a need to develop some courses in written and verbal communication for their employees. Had U of L not approached the bank, Schulman says, neither side would have been aware of the other's needs or resources. Further meetings between bank employees and faculty in the departments of communications and English have led to the development of curricula and textbooks for the bank.

CBCP's most successful results have been with home-based concerns, Schulman says. In terms of the Louisville metropolitan community, in fact, the College-Business Cooperative Program is proving to be particularly timely. Louisville is in the midst of a traumatic transition, according to Schulman, having suffered the loss or depletion of many blue-collar manufacturing industries. With the community's recent shift to a service economy, the university itself—with its 19,000+ students—has been under considerable pressure to assist in the economic rehabilitation and redevelopment of the city, a challenge that CBCP is embracing. —*J.A.M.*

For more information, contact Robert Schulman; Director, College-Business Cooperative Program; College of Arts and Sciences; University of Louisville; Louisville, KY 40292 (502/588/6490).

University of Missouri-Columbia

Focus on agribusiness savvy and leadership potential

The College of Agriculture at the University of Missouri-Columbia offers two distinct programs that emphasize ties between agriculture and business. While the John E. Brown Scholars Program is geared specifically to seniors in agriculture, giving them an intensive, one-week, on-site exposure to an agribusiness firm, the Missouri Agricultural Leadership of Tomorrow (ALOT) Program addresses the needs of a different constituency: ALOT provides leadership development opportunities strictly for selected young agriculture leaders in the state.

With an approximate undergraduate enrollment of 1,700, UMC's College of Agriculture has a diverse mix of departments, ranging from agricultural engineering and plant pathology to agricultural journalism and agronomy. The majority of students are enrolled in either agricultural economics or animal science studies.

A 1943 graduate of the college helped make the Brown Scholars Program become a reality, says Charles L. Cramer, program co-director and professor of agricultural economics. As a successful businessman in farm supplies, John E. Brown donated stock shares to the college with a request that the proceeds be used to improve agriculture students' business savvy. It seems that "many of our students who graduated have taken jobs with a business firm," notes Cramer, "never having been inside [one] to see how people interact."

From the classroom to the boardroom

Cramer maintains that the program's objective is for students in the UMC College of Agriculture to "learn through personal contact with executives in the business firm environment how people work to carry out business objectives." According to a program description, if the objective is met, "students integrate learning from classroom instruction with realities of the business environment; get acquainted with a sample of problems to be solved in a business firm; learn how people interact in a business setting; become personally acquainted with business executives, some of whom will serve as role models; and have increased awareness of an important part of the agribusiness sector."

Now in its third year, the program allows 16 seniors, who are interested in agribusiness, the opportunity to spend a week during the January break with one of four St. Louis businesses: Anheuser-Busch, the farm credit bank system, the St. Louis Merchants Exchange, and Ralston Purina. Although agricultural economics majors make up the majority of students in the program, reports Cramer, agricultural journalism students represented about one-third of the participants during the 1983-84 academic year. Other departments represented in the past include agricultural engineering, agronomy, animal science, and agricultural education.

A group of four students visits the same firm each day where they are in one-on-one contact with an on-site mentor and various other personnel. Depending on the company, students may gain first-hand knowledge of such areas as loan security and fund generation at the farm credit bank, marketing techniques employed at Ralston Purina, or analysis of prospective plant locations for Anheuser-Busch. Although students write a summary/evaluative report of their experiences upon completion of the program, they are not tested on the amount of information and/or knowledge they absorb during the week. "We don't expect them to learn about finance, or about any specific technical subject," says Cramer. "That's incidental to how they spend their week. What we're interested in here is a socialization process."

Additionally, students participate in evening seminars at the hotel where they are staying. Leading off the two-hour sessions is John Brown, who discusses his business philosophy with the group. Another lecture usually includes an address by an individual from an executive search firm or a personnel director from a major agribusiness company. The evening sessions conclude Thursday with a reception and dinner attended by the students and several employees from each of the host firms. This feature was added to the program after the first run in 1983-84, says Cramer, when a number of the participating firms indicated that they would enjoy an opportunity to meet all of the student participants.

Cramer considers the program experience "a real revelation for many" students. Many come back as advocates of their respective firms. Some even change their courses for the last semester of their senior year. If anything, says Cramer, the experience "gives them an appropriate mind-set for their approaching job search."

Not for students only

For those already active in farming, agribusiness, or agricultural lending, the college designed Missouri Agricultural Leadership of Tomorrow (ALOT), according to a program description, specifically "to enhance leadership skills."

Approximately 30 candidates between the ages of 25 and 40 are guided through the two-year program of study tours and seminars. Most of the participants, notes J. Bruce Bullock, chairman of the Department of Agricultural Economics, are college graduates and actively engaged in farming. All of them have demonstrated some

form of leadership, such as presiding over the local corn growers association or farm bureau.

From the outset, the seminars expose participants to a broad overview of the United States' economy in general —and agricultural economy in particular—as well as international trade problems. Among the program highlights are training sessions aimed at honing participants' speaking, interviewing, and interpersonal skills; a session on how to develop constructive skepticism; and a visit to the opera. The activities "run all the way from having some of their conventional wisdom challenged by interesting and thoughtful speakers," says Bullock, "to trying to expand their cultural dimensions as well."

The seminars lay a foundation for the travel tours interspersed throughout ALOT's duration. About half of the time is spent on outings to various cities within the state, across the nation, and Europe. According to Bullock, a major part of the program involves a trip to New York City and Washington, DC, where the focus is on understanding the operations of financial institutions and the federal government, respectively. Through meaningful contact with urban and state leaders, program participants learn more about urban issues and problems during the trip to St. Louis, and get a feel for the intricacies of state government while in Jefferson City, Missouri's capital.

While overseas, ALOT candidates spend about two weeks touring Germany, the Netherlands, France, and Switzerland. During the program's first trip in 1983-84, ALOT participants stayed with agricultural leaders in Switzerland. Describing the trip as an "educational activity from the word 'go,'" Bullock contends that the foreign exposure aids the participants' "understanding of how agriculture is organized in the European Common Market and gives them a better perception of what another part of the world is like relative to what they see here in Missouri."

Addressing the needs of those interested in the ALOT experience, Bullock notes that "professional development" remains the program's key objective. "We're not in any way trying to teach them to become better farmers or agriculturalists; we're trying simply to give them a broader horizon with which to be better leaders." —*L.M.N.*

For more information, contact Charles L. Cramer; Co-director, John E. Brown Scholars Program and Professor of Agricultural Economics; and J. Bruce Bullock; Chairman, Department of Agricultural Economics; University of Missouri-Columbia; Columbia, MO 65211 (314/882-3444).

University of New Hampshire

Continuing education programs respond to state's needs

Campus-business collaboration at the University of New Hampshire is not a recent phenomenon. As early as the late 1950s and early 1960s, the university was already initiating joint programming with state banking, accounting, and bar associations through its Division of Continuing Education (DCE), known at the time as university extension.

Since then, as the economy of the state has changed and more firms have progressed technologically, DCE's clientele also has expanded, due in large part, according to Gary Ensign, DCE's associate director, to the division's responsive stance toward the business community. From a department originally tailored to meet the needs of schoolteachers, DCE has broadened its orientation toward business and career professionals, offering a variety of certificate programs, workshops, and special part-time degrees.

According to Ensign, the university has been spurred on by industrial development occurring within the state: "Some of the needs to which the university, as a state institution, is responding are aimed at helping the indigenous population meet the changing job demands as well as the changing industries that we see in our state."

One of the areas in which DCE has seen a significant increase in registrations is for courses relating to the use and application of computer software. As Ensign notes, "individuals want to develop skills so they know how to effectively use and adapt software for their particular needs or applications."

The division is also expanding the number of training programs it conducts on and off campus for business and government. In the summer of 1984, according to Ensign, the division, with the university's Whittemore School of Business and Economics and the College of Engineering and Physical Sciences, hosted a breakfast for 40 personnel, training, and human resource directors. "Follow-up contacts yielded over 40 separate training programs," Ensign states, compared with six the previous year.

Almost all the training programs overseen by DCE involve campus faculty and staff, according to Ensign, rather than off-campus training consultants, although the university's proximity to Boston makes the latter readily available. Faculty involvement has resulted in several bonuses for the university and the student body. As Ensign notes, "the involvement of faculty in corporate training is seen as a real plus for their professional development. In some cases this has also led to student involvement in corporate projects and field experience training."

Individuals studying history may be assigned to a municipal planning agency covering a historic district; a sociology major may take an internship with a criminal justice agency to learn more about the penal system.

DCE's field experience program offers interested students on-the-job training with local and out-of-state companies. Originally conceived for those in the associate degree program, the concept has since been expanded into all the colleges of the university at the graduate, as well as undergraduate, level.

Many of the students who apply to the field experience program come from the liberal arts area, according to Ensign. Individuals studying history may be assigned to a municipal planning agency covering a historic district; a sociology major may take an internship with a criminal justice agency to learn more about the penal system.

Many students enrolled in DCE and considering a job change register for the field experience program, Ensign says, because it allows them to obtain some experience in a "protected situation," after which they can decide if they want to make a job or career move. Businesses benefit too, he notes, receiving quality help at less cost than hiring someone full-time.

"The philosophy underlying all DCE activities," Ensign says, "is that UNH, as an educational institution, has a wide variety of resources that should be available to the state, and DCE is here to facilitate that." —*J.A.M.*

For more information, contact Gary C. Ensign; Associate Director, Division of Continuing Education; Brook House; 24 Rosemary Lane; Durham, NH 03824-3528 (603/862-1088).

University of Puget Sound

Developing leadership through liberal education

The University of Puget Sound's Business Leadership Program (BLP) was implemented in 1984 in response to national concern over the increasing dichotomy between liberal learning and professional education. Designed to prepare future business leaders for the ambiguities of a world influenced by cultural and political—as well as economic—forces, BLP's rationale is based on the belief that a broad-based education is a precursor to managerial success.

The respect for the past and familiarity with present issues that liberal education fosters are prerequisites for business leaders, according to Robert Waldo, BLP co-director. "People who have a vision of the future through their understanding of the past will have the ability to lead others to that vision," he says.

A four-year major in Puget Sound's School of Business and Public Administration, BLP is a blend of business and liberal arts courses enriched by the presence of a professional mentor and punctuated by a junior-year internship. Waldo emphasizes the selectivity of the program, noting that enrollment has been limited to 25 students each year who, after being admitted to the university, must complete a separate BLP application. This application includes three teacher recommendations, information about the students' academic and extracurricular activities, and three essays. Waldo describes the program as "rigorous," and says that BLP seeks to attract "that subset of highly intelligent and motivated students" capable of high performance in a variety of subject areas.

Waldo maintains that for the aspiring business leader, neither a too narrowly focused business nor humanities course of study is advisable—and BLP provides a balance between the two. The program presents students with a core of requirements, developed to give them significant exposure to the "vocabulary of business," as well as teach them the analytical and communications skills inherent in a true liberal education.

BLP business core requirements include courses in economics, accounting, business law, statistics, marketing, and management. These classes, says Waldo, are taught at an accelerated level to challenge students. BLP majors must also take courses in government and history, ethics, foreign language, and mathematics and computer science (some of these BLP classes may be taken in fulfillment of a university-wide core, which consists of 11 courses in the arts, sciences, and humanities).

In addition to these courses, BLP students take an average of 15 electives that they may use to pursue more advanced business courses or explore another area of interest. This flexibility, says Waldo, has encouraged students to consider a second major or minor in addition to the BLP degree, with a majority of students concentrating in such subjects as economics, computer science, foreign language, and international affairs. Business-related courses are also being developed to help students relate their majors to other topics, says Waldo, noting the history department's BLP course, "The Industrial Revolution in America." Waldo says that another course on cultural differences may be in the offing because many BLP stu-

dents are interested in the international aspects of business, and are especially drawn to Japanese language and culture.

'People who have a vision of the future through their understanding of the past will have the ability to lead others to that vision.'

The mentor

A major component of the BLP experience is direct contact with business people and their world. A four-year relationship with a business executive mentor gives students continuous access to an advisor knowledgeable in their field of interest. No more than five students are assigned to each volunteer mentor, who agrees to meet with them between three and five times during the year. Meetings typically entail a tour of the mentor's place of business, discussions of the mentor's education and business history, and discussions of the students' education and career goals. "The mentors serve as role models for the students," says Waldo, who notes that those participating in the program are all proponents of liberal education. "Mentors impress upon our students the importance of learning how to think." Seven mentors are currently advising the class of 1988, including a newspaper promotion manager, an attorney, and an executive vice president of a national bank.

BLP includes a non-credit internship to be taken during the summer between the junior and senior years. The first BLP internships are still a year away, but Waldo is in the process of securing participating companies willing to employ students in meaningful projects. —*N.M.L.*

For more information, contact Robert Waldo; Co-director, Business Leadership Program; University of Puget Sound; 1500 North Warner; Tacoma, Washington 98416-0002 (206/756-3153).

Scripps College

Corporate training program enhances informed choices

Students at Scripps College in Claremont, California, are given an opportunity to make an informed choice about their own career and life decisions through participating in a corporate training program that prepares them for the working world.

Corporate Training for Liberal Arts Women (CTLAW), explains Cynthia Thomas, director of career planning at Scripps, "responds to the student's need to know more about the corporate structure and have a chance to experience it in a first-hand manner before leaving the college environment." The program was begun when administrators at the school, a small liberal arts college for women located 45 minutes from Los Angeles, decided that the students, many of whom went on to careers in business, were not getting the exposure they needed to the ins and outs of business and corporate life.

Now in its seventh year, CTLAW has become very popular among the 600 students attending Scripps, even though it is an extracurricular, noncredit program. Instead, Thomas says, the credit comes from the "prestige of being in the program and coming through it." Students respect the mandatory attendance policy and treat the classes seriously. "The credibility of the program is very high," Thomas explains. "Enough people have been through it and then been able to have a smoother transition into the working world."

Conducted like a seminar, CTLAW is limited to 25 students. Initially a two-year program, it was reduced to one year to accommodate more participants. The group meets every other Thursday evening during the academic year to hear speakers. Additional time is spent attending workshops and going on field trips. The program ends with a paid internship during the summer.

To participate, students must first submit an application and be interviewed, usually during the spring semester, when Thomas also has an open house for interested students. Applications are also accepted from students seeking positions on CTLAW's staff although applicants interested in this aspect of the program are required to have a letter of recommendation from a faculty member.

During the interviewing, Thomas and her staff focus on several criteria. First, according to Thomas, the candidates are questioned on their knowledge of CTLAW: "Have they done some research, read the brochure, talked with some of the current participants or staff members to get a good sense of what the program is?" Secondly, the students are asked to consider how the program fits into their career goals, how it will supplement their education. And finally, they must be able to make a commitment in terms of time and energy, and have some sense of what their own contribution to the seminar may be.

Seminars geared to specific choices

The program begins in the fall with an informal session where the previous year's participants discuss their summer internship. It is also a brainstorming session, according to Thomas, to determine the fields of interest

of the current year's participants—banking, sales and marketing, financial management, hospital administration, interior decorating, arts management, or retailing, for example. Speakers for the seminars are subsequently chosen with the students' interests in mind.

Once the topics have been designated, the staff begins to locate speakers, first contacting either alumni in the area or major organizations. Speakers are asked to present an overview of their fields and also give some background on the decision-making process behind their career choice, explains Thomas, usually pinpointing what they are currently doing, how they got there, what their career progression was, and, if they changed fields along the way, what some of the decisions affecting them were.

Many seminars focus on a particular skill: students participate in mock interviewing with recruitment specialists from Xerox and Bullock's, an area retail chain. Recruiters conduct interviews with selected participants and then assess the interviews before the whole group, allowing the interviewees as well as the students watching the proceedings to give their impressions.

Students spend one seminar session compiling a professional development portfolio, a "self-help booklet," as Thomas describes it, that forces them to clarify their values, pinpoint their skills, and develop a good sense of what they have gained from their experiences. "Many times we're able to say, 'I've done this' or 'I've done that,' but when someone—especially in an interview—says 'that's nice, but what did you gain from it?' that throws people off. Through the professional development portfolio workshop we look at different experiences the students have had either in terms of an academic experience, an extracurricular experience, or a work experience, and pull out those skills, skills they can transfer and utilize again in other situations."

Additional training situations that have resulted from the program include two professional selling skills workshops: one sponsored by Xerox, and the other by Coldwell Banker. Xerox's two-day campus workshop focused on organizational and administrative skills such as time management and team building. The workshop was open to non-CTLAW students, but Thomas believes CTLAW helped attract Xerox's attention to the campus. Coldwell Banker's workshop, four sessions at corporate headquarters in Los Angeles, dealt with the psychology of persuading and influencing others.

Students spend much of their second semester in the program perfecting their resumes and researching summer internships. The staff works with the students, contacting companies and setting up interviews. Many students elect to leave the Los Angeles area, perhaps to return home. They are encouraged to begin job-hunting over winter break.

The major emphasis of CTLAW is not on the internship, though most students participate. Rather, it is on "the development aspect being built into the process," according to Thomas. "So many students have a dream of what something may be, and yet the glamour, the excitement, and everything they think might be there may or may not be. Or it may be more exciting than they imagined," Thomas explains. "The best way to get to know a field is to talk with people involved in it: what do they see as the highlights? the stumbling blocks? how do they get around them? what are the challenges? Then they see it, and then they get some hands-on experience. When we can provide all that then we have really enabled the student to make an informed decision about her life."

—*J.A.M.*

For more information, contact Cynthia R. Thomas; Director of Career Planning; Scripps College; Claremont, CA 91711 (714/621-8180).

Towson State University

Solving business problems with mathematical models

Upper-level students in mathematics (and occasionally in business, economics, physics, health, and chemistry) tackle real-life business and industrial problems as participants in the Applied Mathematics Laboratory (AML) at Towson State University. Since the program's inception, student teams guided by faculty advisers have consulted on projects such as solving a university housing problem and designing an instrument to aid in national defense.

Located on the outskirts of Baltimore, TSU is situated within close proximity to a number of industries and multinational corporate headquarters, and thus becomes a prime candidate to offer consulting services. The decision to proceed with the program, says Robert L. Caret, dean of the College of Natural and Applied Mathematical Sciences and associate vice president for academic computing, "fit in quite well with our outreach efforts into the community."

Modeled after a similar program at Claremont Graduate School in California, AML has met with a high degree of success. This is due in part to the high calibre of students involved, notes Caret, as well as the type of projects undertaken. Usually four to six students are assigned to a year-long project, and receive three credits per semester. "They treat the program more like a senior-level research course, and work on the average a minimum of 10 hours per week and a maximum of 30."

Faculty members, serving in advisory roles, "are simply there to act as bumpers for the students" so that when the students move in a nonproductive direction, the faculty member can bounce them back toward the problem, says Caret. "They also provide an expertise that students may not have had a chance to develop."

From campus housing to clearing checks

The program began in 1980 with the help of a National Science Foundation grant. A year later, the university served as AML's first sponsor, assigning it the task of analyzing the housing shortage on campus and justifying the need for new dormitories in light of a trend toward declining "college-age" enrollment. The participants correctly assessed an overwhelming need for more on-campus housing. Dorms were built and filled within the first year. For another client, the AML team conceived of a model—subsequently adopted—for minimizing the float time of checks from the various branches of Union Trust Bank to their final destination at the Federal Reserve.

But not every case taken on by AML has come to a successful conclusion. Students working on a project with the AAI Corporation to develop an instrument capable of identifying vehicles by their sound waves met disappointment. Although students from both the mathematics and physics departments participated, along with a faculty member from each, according to Caret, their results did not lead to an answer, as has been the case in previous research in this area in the last 25 years.

'I think this kind of program really does open doors and let people at least see what's on the other side.'

Advance preparation is vital to AML's smooth operation from year to year. In January—six months prior to beginning a new project—the AML director or an advisory board member contacts a potential sponsor. By the end of the spring semester, the problem is defined, a contract has been finalized and signed, and faculty adviser(s) and student members have been selected for the team.

The faculty members work during the summer to pull together the essential materials to begin the project in September. At that point, the students and faculty adviser meet with the industrial representatives in order to arrive at the exact questions to be answered. By mid-fall, the students have completed a search of the literature base, determined the best way of handling the problem, and assembled the appropriate resource materials, such as specialty software programs or specific data from the company. They then begin to work on solving the problem. According to Caret, most of these problems have involved mathematical models requiring computer runs of large amounts of data and "fine-tuning" until a workable model is found.

Students present preliminary and final oral and written reports to the sponsoring corporation in December and June, respectively. According to Caret, the delivery of the final report usually involves participation by the sponsor's CEO.

The total annual operating expense for AML currently comes to $14,000. This includes summer stipends for the two faculty members working with AML; the expense of hiring a part-time instructor to take over a course section no longer being taught by the adviser; and the secretarial help, supplies, and materials needed to run the lab.

While Caret admits that some members within the college, and within the mathematics department itself, do not feel AML is worth the effort because it affects only a small number of mathematics majors, he points to the overriding benefits to the students and faculty involved, as well as to the local community. "I think this kind of program really does open doors and let people at least see what's on the other side." —*L.M.N.*

For more information, contact Robert L. Caret; Dean of the College of Natural and Applied Mathematical Sciences and Associate Vice President for Academic Computing; Towson State University; Towson, MD 21204 (301/321-2121).

RESOURCES

So that *Forum* may best serve our readers, we will be varying the format of our "Resources" section. In this issue, we offer brief descriptions of several individual courses, an annotated bibliography, and a partial listing of the many institutions that responded to the editorial call for this issue. The schools are grouped into informal categories although a number of them are pursuing relationships with business and government through a variety of programs.

Courses

A number of colleges offer individual courses that focus on business within the context of liberal learning.

- Beaver College's "Business Policy Formation and Administration" involves students in a semester-long simulation to experience top management decision-making while learning to coordinate the activities of various departments in an organization. At the beginning of the

semester, students receive a scenario giving them background information on the company and speculation as to its future. The students, divided into two- to three-member teams, must then devise a strategy for running the company and set goals that they anticipate accomplishing during the company's three years of simulated operation.

At the end of each simulated year, the groups must prepare and present a written report to a board of directors, comprised of faculty from the business department, other academic departments on campus, the college's board of trustees, and business executives. Board members question the students about the decisions they've made, and probe their understanding of what they're doing.

One of the primary goals of the course "is to have students integrate material from virtually any other course that they've had." Students majoring in accounting, for example, may thus develop more of an appreciation for marketing. Working with the board also helps to broaden the students' perspectives and teaches them how to write reports and present them before a diverse audience.

For more information, contact William D. Biggs; Chairman, Department of Business Administration and Economics; Beaver College; Glenside, PA 19038 (215/572-2900).

• Students in Chestnut Hill College's "Corporate Decision-Making" class also are asked to participate in the running of a fictional corporation. Unlike students at Beaver, however, students at this small liberal arts college for women are each bequeathed the company, and then must decide to sell it, keep it, or go public. That decision, made at the course's conclusion, is based on weekly visits with company vice-presidents, business executives brought in for role-playing.

Each executive meets with the students twice in one week to provide background on his or her own personal experience in the corporate world before addressing certain issues of the fictional corporation, problems the executive might foresee with the company, and plans for its future. Students are given an opportunity during the second meeting to question the executives.

At the end of the semester, students choose the executive they feel is best qualified to take over the company or prepare it for sale. The decision is announced during a dinner that allows students to mingle more informally with executives and their spouses.

For more information, contact Janet S. Deans; Chairperson, Department of Economics and Business; Chestnut Hill College; Northwest and Germantown Avenues, Philadelphia, PA 19118 (215/248-7178).

• At the University of Illinois at Chicago, "Executives in the Classroom" brings senior executives from major corporations to spend a day on campus, first meeting with top administrators, and then sharing an informal coffee session with students before delivering a lecture in the classroom.

The classroom lecture is preceded by a 30-minute presentation by a group of 8-10 students highlighting the corporation's history, product lines, sales figures, and current concerns. The executive, in turn, discusses the importance of people in an organization, strategic planning, the impact of change on an organization, and the importance of profit with specific reference to his or her own firm. There are 8-10 guest lectures per semester.

For more information, contact J. Fred McLimore; Department of Management; College of Business Administration; University of Illinois at Chicago; 601 South Morgan Street, Chicago, IL 60612 (312/996-0529).

• Students in marketing and management classes at Mercy College spend a semester as consultants learning how to develop an idea and then sell it. Working in teams, the students compete with each other to come up with the best marketing campaign for a local company, a winning idea for which the company executive is willing to pay $250.

Competing not only with other class members but with other classes, students spend the semester researching the company, analyzing sales, service, personnel, and other facets of the operation to see where improvements may be made. Their findings are then put into an end-of-the-semester presentation upon which the final grade is based.

For more information, contact Donald Borbee; Assistant Professor; Mercy College; 555 Broadway, Dobbs Ferry, NY 10522 (914/693-4500).

• Freshmen and sophomores at Skidmore College in upstate New York can take "Introduction to Business Organization and Management."

Team-taught by a group of four or five teachers, the course examines business policy through the use of case studies, analyzing marketing strategies, financial analysis, budgeting and control systems, human resource management, and the organizational behavior of individual companies. Beginning with the largest picture, the students move incrementally toward studying the individual in an organization.

At the beginning of the semester, the students are randomly assigned to groups of four to plan a business strategy for the company under examination. Case studies have included, among others, International Harvester, the Metropolitan Museum of Art, and People's Express. At semester's end, students make a presentation of their strategy before a board of executives. The grade, given by the executives, represents 25 percent of the final grade and is based not so much on the effort that went into the

project but on whether or not the strategy will work.

According to one instructor, the success of the class is due to its emphasis on the liberal arts aspects of the course—skills gained in thinking, writing, and communicating. Through the process, she says, students gain self-confidence and greater self-esteem.

For more information, contact Colleen Burke; Assistant Professor, Department of Business; Skidmore College; Saratoga Springs, NY 12866-0851 (518/584-5000).

• A January-term course at Drew University in Madison, New Jersey, has looked for five consecutive years at one corporation: AT&T. Team-taught by professors of economics and psychology at Drew, as well as by AT&T personnel, the course offers students a unique opportunity for an in-depth study of corporate divestment.

Begun just before divestment papers were signed, the 3½-week course traces the impact divestiture has had upon individuals and the corporation. Students are given an introduction to AT&T. In addition to classes held on campus, there are two on-site visits per week, during which students hear presentations on different aspects of the corporation, such as market-research services, legal issues, financing, and employment. Students also tour Bell Laboratories and one of the manufacturing facilities.

The course is listed in three different departments at Drew—sociology, economics, and psychology—and students from each are encouraged to bring their own perspectives to the material discussed in class. Students are required to write three response papers, each highlighting some particular aspect of the corporation dealt with during a one-week period and incorporating outside reading.

For more information, contact Vivian A. Bull; Associate Dean, College of Liberal Arts; Drew University; Madison, NJ 07940 (201/377-3000).

• "Humanities and Business," a course offered at Jacksonville University, examines the history and influence of business on American life from four perspectives: business as extended family; business as mass production; business as an [entrepreneurial] game; and business as corporate system.

The course emphasizes not only the internal changes that business has undergone since colonial times, but also the societal needs that prompt these changes—religion, education, child-rearing, and political and legal structures—and how they in turn have been shaped by business interests.

Reading for the course includes a selection of poetry and prose; students are also exposed to slides, films, and music tapes featuring such artists as Thoreau, O'Henry, Sandburg, Copland, Gershwin, Wyeth, and Hopper.

For more information contact Sharon Scholl; Humanities Faculty; Jacksonville University; Jacksonville, FL 32211 (904/744-3950).

Bibliography

Agenda for Business and Higher Education, Thomas M. Stauffer, ed. (Washington, DC: American Council on Education, 1980).

This publication focuses on campus-business cooperative issues raised at past meetings of the American Council on Education's Business-Higher Education Forum. It includes chapters detailing the mutual concerns of academic and corporate leaders: federal regulations, productivity, energy research, and international relationships.

Corporate and Campus Cooperation: An Action Agenda. (Washington, DC: Business-Higher Education Forum, American Council on Education, 1984).

This report details the advantages to all parties of both traditional and innovative corporate-campus cooperative ventures in areas such as research, personnel exchanges, adult education and training, corporate financial support, and corporate recruitment.

Doyle, Peter H. and Candice Brisson. *Partners in Growth: Business-Higher Education Development Strategies.* (Washington, DC: Northeast-Midwest Institute, The Center for Regional Policy, 1985).

The first in a series of six, this monograph describes a variety of projects and educational programs that involve consulting, informal networking, industrial extension services, research, and state programs that promote innovation. Available from the Northeast-Midwest Institute; 218 D Street, SE; Washington, DC 20003, for $5 each plus $2 per order for handling (prepaid).

"Higher Education Partnerships." *ProEducation . . . The Magazine About Partnerships with Education,* April 1985, pp. 9-19.

This article contains a sampling of colleges engaged in cooperative programs with business and industry, with an overview by Reverend Theodore M. Hesburgh, C.S.C., on the mutual benefits of campus-business collaboration in "The Role of Business in Higher Education," pp. 12-15.

Hurwitz, Sol. "Civic Partners: Business and Liberal Education." *Liberal Education* 68 (Winter 1982): 329-337.

Hurwitz's essay links the historical importance of a liberal education with America's private enterprise system. He provides examples of and recommendations for fostering successful partnerships between business and higher education to "strengthen the civic life of America."

Jones, Thomas B. *Building Bridges: Cooperative Projects for Humanities and Business*, 1983.

In this paper presented at the "Humanities and Careers in Business" conference sponsored by the Association of American Colleges and the National Endowment for the Humanities, Jones presents a summary of cooperative projects between higher education and business, with particular reference to the humanities. (Available from ERIC, 3900 Wheeler Avenue, Alexandria, VA 22304, at a cost of $2.15 plus $1.74 for postage and handling.)

Lynton, Ernest A. *The Missing Connection Between Business and the Universities*. (New York: American Council on Education and Macmillan Publishing Company, 1984).

Lynton examines the "limited connection" between higher education and the corporate sector in meeting needs for "human resource development." He emphasizes that colleges and universities must significantly alter their attitudes, policies, and procedures to achieve closer working relationships with business.

Mohrman, Kathryn. *Building Bridges Between Business and Campus*. (Washington, DC: Association of American Colleges, 1983).

In an effort to spur increased cooperation between colleges and business in Hartford, Memphis, and the San Francisco Bay area, the Association of American Colleges sponsored three conferences on the theme, "Building Bridges Between Business and Campus," between April 1981 and April 1982. This report describes the three conferences, presents the recommendations developed by participants, and concludes with suggestions for the replication of the model in other locations.

Morse, Suzanne W. *Employee Educational Programs: Implications for Industry and Higher Education*. (Washington, DC: Association for the Study of Higher Education, 1984).

Number seven in the ASHE-ERIC Higher Education Research Report series, this report offers advice on how "traditional education" can find ways to work with business, government, and labor unions to meet the demands for continual education and training of America's work force.

Programs

Consulting

Bucknell University, Consortium in Computer-Aided Mechanics and Materials Design and Testing. Contact Thomas P. Rich or James G. Orbison; College of Engineering; Bucknell University; Lewisburg, PA 17837 (717/524-3896).

Saint Mary-of-the-Woods College, Computer Information Systems (CIS). Contact Joanne Golding; Director, CIS; Saint Mary-of-the-Woods Collge; St. Mary-of-the-Woods, IN 47876 (812/535-5283).

Continuing education

Guilford College. Contact Ann Terrill Johnson; Director of Continuing Education; Guilford College; 5800 West Friendly Ave.; Greensboro, NC 27410 (919/292-5511).

Higher Education Council of Columbus, Joint Marketing Program. Contact Peggy Calestro; Executive Director, HECC; c/o The Columbus College of Art and Design; 47 N. Washington Avenue; Columbus, OH 43215-3875 (614/224-9101).

Indiana University-Purdue University at Indianapolis, "Learn & Shop College Credit Program." Contact James R. East; Director, Learn & Shop; Indiana University-Purdue University; Cavanaugh Hall 441; 425 Agnes St.; Indianapolis, IN 46202 (317/264-4887).

The University of Alabama, New College/External Degree Program. Contact Harriet W. Cabell; Director, New College; Tutwiler Hall, P. O. Drawer ED, The University of Alabama; University, AL 35486 (205/348-6000).

University of Kentucky, "Downtown At Noon." Contact JoAnn Smith; Director, Program Development and Marketing; University of Kentucky; 112 Frazee Hall; Lexington, KY 40506-0031 (606/257-1127).

The University of Texas at Austin. Contact Karen Watkins; Adult Education and Human Resource Development; College of Education; The University of Texas at Austin; Austin, TX 78712-1294.

Cooperative education programs

Bethany College, "American Business in Action." Contact James R. Speegle; Office of Career and Professional Development; Bethany College; Bethany, WV 26032 (304/829-7852).

Creighton University. Contact David C. Higginson; Assistant Dean, College of Arts and Sciences; Creighton University; California at 24th St.; Omaha, NE 68178 (402/280-2800).

Fiorello H. LaGuardia Community College. The City University of New York, mandatory cooperative education program. Contact Harry N. Heinemann; Dean, Division of Cooperative Education; LaGuardia Community College, CUNY; 31-10 Thomson Avenue; Long Island, NY 11101 (718/626-2700).

Kentucky State University. Contact Ronald Banks; Director of Placement; Kentucky State University; Frankfort, KY 40601 (502/227-5948).

Saint Leo College, Restaurant Management. Contact Marvin T. Travis; Professor of Management and Chairman, Division of Business Administration; P. O. Box 2067; Saint Leo, FL 33574-2067 (904/588-8309; 813/229-2137).

Suffolk University. Contact Elliot Gabriel; Director of Career Services & Cooperative Education; Suffolk University; 8 Ashburton Place; Boston, MA 02108 (617/723-4700).

University of Cincinnati. Contact James M. Langley; Assistant Vice President of Public Affairs; University of Cincinnati; Mail Location 65; Cincinnati, OH 45221-0065 (513/475-3346).

The University of Toledo. Contact James M. Daschbach; Professor and Chairman, College of Engineering; Department of Industrial Engineering; The University of Toledo; 2801 W. Bancroft St.; Toledo, OH 43606 (419/537-2412).

Cooperative education programs with high schools

Central Washington University, "Business Week." Contact Jimmie R. Applegate; Dean, School of Professional Studies; Central Washington University; Ellensburg, WA 98926 (509/963-1411).

Mount Union College, "Cooperative Education Program in the Liberal Arts." Contact Hugh I. Jae; Director, Cooperative Education and Placement; Mount Union College; Alliance, OH 44601.

Wabash College, "Opportunities to Learn About Business." Contact Robert C. Pebworth, Jr.; Director of Career Services; Wabash College; P. O. Box 352; Crawfordsville, IN 47933 (317/362-1400).

On-site cooperative education programs

Capital University, "University Without Walls program." Contact Harry Jebsen, Jr.; Dean, College of Arts and Sciences; Capital University; Columbus, OH 43209-2394 (614/236-6011).

Los Angeles Community Colleges. Contact Linda Thor; Senior Director, Occupational and Technical Education; Los Angeles Community Colleges; 617 West Seventh Street; Los Angeles, CA 90017 (213/628-7788).

Quinnipiac College. Contact Noel Bishop; Dean, Corporate and Professional Training; Quinnipiac College; Hamden, CT 06518-0569 (203/281-8606).

Simmons College, John Hancock Program. Contact Louise Comeau, Director of Special Programs; Simmons College; 300 The Fenway; Boston, MA 02115 (617/738-2141).

Curriculum

Franklin University, Curriculum Development Project. Contact K. Sue Foley; Dean, College of Arts and Social Sciences; Franklin University; 201 S. Grant Avenue; Columbus, OH 43215 (614/224-6237).

Humanities courses

Dartmouth College, Intensive Foreign Language Study Programs. Contact Micheline Lyons; Assistant Director, Language Outreach Education; 101 Wentworth; Dartmouth College; Hanover, NH 03755 (603/646-2922 and 646-2915).

Pace University, Three-Day Executive Program. Contact Dorothy Blaney; Office of Executive Vice President for Institutional Planning and Academic Support Services; Pace University; Pace Plaza; New York, NY 10038 (212/488-1370).

University of California–Santa Cruz, "The Dickens Project." Contact Dorene Blake, Project Assistant; 155 Kresge College; UC–Santa Cruz; Santa Cruz, CA 95064-1016 (408/429-2103).

Wesleyan University, "Ethical Consideration in Business Decisions." Contact Richard A. Miller; Professor of Economics; Wesleyan University; Middletown, CT 06457 (203/347-9411, ext. 2330).

International

Loyola Marymount University, "Comparative Management Systems in Asia." Contact Dr. H. Daniel Stage; Associate Dean, MBA Program; Loyola Marymount University; 7101 West 80th Street; Los Angeles, CA 90045 (213/642-2731).

Internships

Lafayette College, Economic and Business Internships. Contact Edmond J. Seifried; Director, Internship Program; Economics and Business Department; Lafayette College; Easton, PA 18042 (215/250-5314).

Mount St. Mary's College. Contact Teresa F. Keeler; Assistant Dean, Associate Degree Program for Experiential Learning; Mount St. Mary's College; Doherty Campus; 10 Chester Place; Los Angeles, CA 90007 (213/746-0450).

Randolph-Macon College. Contact James R. Buckle; Director, Internship Program; Randolph-Macon College; Ashland, VA 23005 (804/798-8372, ext. 204).

Washington and Jefferson College. Contact Felix R. Livingston; Chairman, Department of Economics and Business; Washington and Jefferson College; Washington, PA 15301.

Placement

Birmingham-Southern College. Contact Judith A. Harrington; Career Counseling and Placement; Birmingham-Southern College; 800 Eighth Avenue, West; Birmingham, AL 35254 (205/226-4717).

Professional development programs

California State University–Long Beach. Contact Donna George; South Coast Center for Professional Training and Development; CSU; Long Beach, CA 90840 (213/498-5570).

Elms College, Personnel Management Certificate Program. Contact Eileen Rosenberg; Director, Business Management; Elms College; Chicopee, MA 01013 (413/598-8351).

Franklin & Marshall College, "Focus, A Management Development Program." Contact Bradley R. Dewey; Dean of the College; P. O. Box 3003; Lancaster, PA 17604-3003 (717/291-3986).

University of Missouri–St. Louis, Supervisory Certificate Training Program. Contact Audrey S. Eaton; Management Development Programs; University of Missouri–St. Louis; 8001 Natural Bridge Road; St. Louis, MO 63121-4499 (314/553-5887).

Texas Christian University, "Managing Managers" executive development program. Contact Edward A. Johnson; Dean, M. J. Neeley School of Business; TCU; P. O. 32868; Fort Worth, TX 76129 (817/921-7526).

Public service

Morningside College, Aquatic Ecology Study Group. Contact Ron Tondreau; Aquatic Studies Group; Morningside College; Sioux City, IA 51106 (712/274-5202).

University of Massachusetts at Amherst. Contact Jaymie Chernoff; Associate to the Chancellor for Economic Development; Whitmore Administration Bldg.; University of Massachusetts; Amherst, MA 01003 (413/545-2211).

Small business

Kalamazoo College, Small Business Institute. Contact Thomas C. Breznau; Director, SBI; 306 Dewing; Kalamazoo College; Kalamazoo, MI 49007 (616/383-8594).

Lane Community College, Small Business Management Program. Contact Jean Names or William O. Dotson; Small Business Management; Business Assistance Center; Lane Community College; 1059 Willamette St.; Eugene, OR 97401 (503/484-2126).

Wilkes College, Small Business Institute. Contact Theodore J. Engel; Chairman, Commerce and Finance Department; Wilkes College; Wilkes-Barre, PA 18766.